

JUN 28 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Pat Reich
Serial No.: 10/821,026
Filed: April 8, 2004
Title: RIDING MOWER WITH DECK HEIGHT ADJUSTMENT

Examiner: Torres, Alicia M.
Group Art Unit: 3671
Docket No.: A480.101.101

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Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Fax No.: (571) 273-8300

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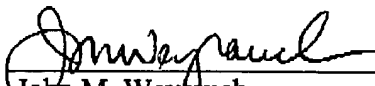
Respectfully submitted,

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Date: June 28, 2006
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By: 
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Reg. No. 37,258

17 PAGES – INCLUDING COVER PAGE

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The Honorable Commissioner of Patents and Trademarks

P.O. Box 1450

Alexandria, VA 22313-1450

Sir/Madam:

We are transmitting herewith the attached:

- ☒ Transmittal Sheet containing Certificate of Mailing (1 pg.).
- ☒ Appeal Brief to the Board of Patent Appeals and Interferences of the U.S. Patent and Trademark Office (9pgs.).
- ☒ Appendix A (5 pgs.).
- ☒ The Commissioner is authorized to charge \$250.00 to Deposit Account No. 500471 to cover Appeal Brief Fee

If an additional fee is required due to changes to the claims, the fee has been calculated as follows:

CLAIMS AS AMENDED						
	(1) Claims Remaining After Amendment		(2) Highest Number Previously Paid For	(3) Percent Extra	Rate	Fee
TOTAL CLAIMS		-			x =	\$
INDEPENDENT CLAIMS		-			x =	\$
[] MULTIPLE DEPENDENT CLAIMS PRESENTED						\$
TOTAL						\$

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By: 

Name: John M. Weyrauch

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Dear Sir/Madam:

This is an appeal from an Office Action dated January 4, 2006 in which claims 1-4, 9, 14 and 17 were finally rejected and claims 5-8 and 10-13 were objected to.

Oral Hearing

Applicant does not request an Oral Hearing of the Appeal in this application.

Real Party in Interest

The real party in interest is Auburn Consolidated Industries, Inc., who is the owner of the entire right, title and interest in the application.

Related Appeals and Interferences

There are no known related appeals or interferences which will directly affect or directly be affected by or have a bearing on the Board's decision in this appeal.

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Appeal Brief to the Board of Patent Appeals and Interferences

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Status of the Claims**I. Total number of claims in the application.**

Claims in the application are: 1-17

II. Status of all the claims.

- A. Claims canceled: 15-16
- B. Claims withdrawn but not canceled: none
- C. Claims pending: 1-14 and 17
- D. Claims allowed: none
- E. Claims rejected: 1-4, 9, 14 and 17
- F. Claims objected to: 5-8 and 10-13

III. Claims on appeal.

- A. The claims on appeal are: 1-4, 9, 14 and 17.

Status of Amendments

No Amendment was filed in response to the final office action dated January 4, 2006.

Summary of Invention

The present invention is an apparatus for adjusting the height of a mowing deck 30 of a riding mower 20. The riding mower 20 includes a frame 22 which includes a front frame member 34, a back frame member 36, a left frame member 38 and a right frame member 40. (Specification Fig. 1 and page 6, lines 2-7). A seat 26 is supported on the frame by a support structure 42. (Fig. 1, page 6, lines 11-13). The mowing deck 30 is carried below frame 22 by a deck lift assembly 50, which is comprised of a rear shaft assembly 54 and a front shaft assembly 56. (Figs. 2 and 6, page 7, lines 7-9). The rear and front shaft assemblies 54, 56 are linked by a pair of guide arms 58, such that rotational movement of rear shaft assembly 54 is transferred to a coordinated rotational movement of front shaft assembly 56. (Figs. 2 and 3, page 7, lines 14-17). Mowing deck 30 is connected to the rear shaft assembly 54 via lift arms 94 and chains 122, and

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is connected to front shaft assembly 56 via arms 170 and chains 122. (Figs. 4 and 6, page 9, lines 4-8 and page 11, lines 22-25).

The general operation of deck lift assembly 50 is depicted in Fig. 6 and is described in the specification on page 11, lines 12-28 through page 12, lines 1-7. Deck 30 is raised by a pivotal movement of foot lever 46 in a forward direction (arrow A). Lever 46 is connected to one end 72 of an arm 52. Arm 52 is disclosed to be an elongate metal member. (Fig. 3 and page 8, line 1). A second end 74 of arm 52 is connected to an inner ear assembly 96 on rear shaft assembly 54. As foot lever 46 pivots forward, arm 52 is pulled forward linearly in the direction shown by arrow B. The forward linear movement of arm 52 causes a forward displacement of inner ear assembly 96 and a clockwise rotation of shaft 92 of rear shaft assembly 54 (arrow C) and an elevation of lift arms 94 (arrow D). The guide arms 58 transfer this raising movement to the front shaft assembly 56 (arrows E and F). Deck 30 is lowered by reversing the direction of movement of foot lever 46.

The height of deck 30 above the ground is a function of the range of travel of arm 52. (Page 13, lines 6-7). The range of travel of arm 52 is controlled by a deck height setting control 48 positioned near the seat 26 of the riding mower 20. (Fig. 1). The deck height setting control 48 includes a cam wheel 190 and a selector wheel 194 mounted on an axle. Arm 52 is positioned between the cam wheel 190 and a selector wheel 194. A shoulder 179 is mounted to extend transversely of one side of arm 52, between the two ends 72, 74 of arm 52, so as to engage an outer perimeter edge of the cam wheel 190. The height of mowing deck 30 is maintained according to the radius r of outer edge 214 of cam wheel 190 selected for engagement with the shoulder 179. (Figs. 9 and 10, page 13, lines 7-13). As the radius r of outer edge 214 selected for engagement with shoulder 179 increases, the mowing deck height increases when shoulder 179 contacts outer edge 214. Conversely, the deck height decreases when the radius r of outer edge 214 selected for engagement with shoulder 179 decreases. (Figs. 9 and 10, page 14, lines 11-16).

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Issues

Whether claims 1, 9 and 14 are unpatentable under 35 U.S.C. § 102(e) as being anticipated by Swartzendruber et al. 6,837,032.

Grouping of Claims

The following groupings of claims are made solely in the interest of consolidating issues and expediting this Appeal. No grouping of claims is intended to be nor should be interpreted as being any form of admission or a statement as to the scope or obviousness of any limitations.

Group I: Claims 1 and 14

Group II: Claim 9.

Argument

The Examiner rejected claims 1-4, 9, 14 and 17 under 35 U.S.C. 102(e) as being anticipated by Swartzendruber et al. 6,837,032. Because Swartzendruber et al. does not disclose a deck height adjustment mechanism having a moveable arm and shoulder as defined in claims 1, 9 and 14, the final rejection cannot be sustained.

In stating the final rejection, the Examiner asserted that a plate 90 of Swartzendruber et al. satisfies the moveable arm and shoulder requirement of the rejected claims. However, item 90 is not pivotally connected to the lever and is not a moveable arm as defined in the claims. Rather, the deck height adjustment mechanism of Swartzendruber et al. employs a lever 62 that is pivotally formed as part of plate 44 via a shaft 64. (Swartzendruber et al. Col. 3, lines 43-45). A rod 69 has one end connected to the lever 62 and the opposite end connected to a plate 72. (Col. 3, lines 47-49). Plate 72 in turn is connected to one end of a rockshaft 70. (Fig. 8). The opposite end of rockshaft 70 connects to a plate 74. (Fig. 8). Plates 72 and 74 are connected by lift links 76 to arms 42 which connect to brackets 40 on the mowing deck 18. Rotation of lever 62 causes a rotation of plate 72 (due to the connection of rod 69 between lever 62 and plate 72) and plate 74 (via the connection of rockshaft 70 between plates 72 and 74).

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Deck 18 is raised by depressing pedal 28 attached to an end 60 of lever 62 and is lowered by reversing direction of lever 62. To maintain the deck height, Swartzendruber et al. disclose a plate 90 that is mounted on rockshaft 70 between plates 72 and 74. (Fig. 8, Col 3, lines 58-59). Plate 90 is caused to rotate in conjunction with the rotation of rockshaft 70. In the deck down position, an edge of plate 90 rests against a height of cut adjuster 118. (Fig. 6, Col. 4, lines 35-38).

Claims 1 and 14

Claims 1 and 14 distinguish over Swartzendruber et al. Claim 1 defines a deck height adjustment apparatus that comprises a lever that is pivotally connected to the frame of the mower. The lever is connected to a first end of a moveable arm. A second end of the moveable arm is operably connected to a deck lift system. The moveable arm is also provided with a shoulder that is positioned between the first and second ends of the moveable arm. The shoulder is connected to and extends normal to the arm. A cam wheel is rotationally connected to the frame of the mower proximate to the shoulder of the arm. The shoulder engages a portion of the outer edge of the cam wheel when the lever is in a first position. A movement of the lever to a second position results in the shoulder becoming spaced from the outer edge of the cam wheel. The mowing deck height above the ground surface is a function of the radius of the cam outer edge in contact with the shoulder when the lever is in the first position. Claim 14 is similar to claim 1 except the deck lift system is defined as comprising a front and a rear rotating assembly connected to the mowing deck and the second end of the arm is connected to the rear rotating assembly of the deck lift system.

Plate 90 of Swartzendruber et al. cannot properly be considered an arm as defined in claims 1 and 14. The arm of claims 1 and 14 require that a first end of the arm be connected to the lever. Plate 90 does not have a first end connected to lever 62. Plate 90 cooperates with lever 62 only through a series of connections, i.e., rockshaft 70, plate 74 and rod 69. The only component of Swartzendruber et al. that is connected at one end to lever 62 is rod 69. The

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second end of rod 69 is connected to the lift mechanism 34, i.e., at plate 74. The Examiner's characterization that a direct connection of the arm to the lever is irrelevant does not accord with the express connection of one end of the arm to the lever defined in claims 1 and 14.

Plate 90 further lacks a shoulder as defined in claims 1 and 14. It is the shoulder of applicant's claimed invention that engages the cam wheel to maintain a selected height of the mowing deck. The shoulder is connected to the arm, but extends normal to the arm. The edge of the arm therefore cannot qualify as a shoulder as defined in claims 1 and 14. The arm itself does not contact the cam wheel, rather it is a shoulder that extends from the arm that engages the cam wheel. Swartzendruber et al. disclose that an edge of a planar plate 90 engages the height of cut adjuster 118. The edge of a planar plate cannot properly constitute a structure that extends normal to the plate, i.e., a shoulder. Accordingly, Swartzendruber et al. does not disclose an arm having a first end connected to the lever with a shoulder on the arm that extends normal to the arm for contacting a cam wheel. As such, the rejection of claims 1 and 14 under 35 U.S.C. 102(e) should not be sustained.

Claim 9

Claim 9 is a method for adjusting the deck height on a riding mower which is an analog to claims 1 and 14 in that it comprises the step of providing a displaceable arm operably connected between a lever that is pivotally connected to the mower frame and a lift system for the mowing deck. Like the arm of claims 1 and 14, the arm of claim 9 includes a shoulder on the arm that is located between the lever and the deck lift system. According to the method of claim 9, when the lever is in a first position, the shoulder of the arm contacts the outer edge of a cam wheel that is rotationally connected to the frame, which thereby sets the desired deck height. According to the claimed method, the deck height may be changed by moving the lever from the first position to a second position thereby causing a displacement of the arm and a location of the shoulder away from the cam outer edge. This results in a raising of the mowing deck. The cam wheel is then rotated to select a desired deck height. The lever is then moved back to the first

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position, thereby displacing the arm and locating the shoulder in contact with the cam outer edge so as to lower the mowing deck to the selected height.

As disclosed in Applicant's specification, the arm provided to perform the claimed method is an elongate metal member that includes a first end and a second end. (Specification Page 8, lines 1-2). The first end of the arm is connected to the lever, and the second end of the arm is connected to part of the deck lift system, e.g., the rear shaft assembly 54. (Specification page 11, lines 14-19). The arm passes between the cam wheel 190 and the selector wheel 194. (See specification page 13, lines 9-10). The arm itself does not contact the cam wheel. As disclosed in the specification, a pivotal movement of the lever causes a linear movement of the arm (i.e., the displacement of the arm) and a rotational movement of the deck lift system. (Specification page 11, lines 14-19). A shoulder is provided on the arm between the two ends of the arm (i.e., between the lever and the deck lift system). (Specification page 12, lines 13-16). The shoulder is located to contact the cam wheel mounted on the frame of the mower. (Specification page 13, lines 11-13).

The method of claim 9 is not disclosed in Swartzendruber et al. Arguments presented relative to claims 1 and 14 have general application to the rejection of claim 9 as well. Furthermore, Swartzendruber et al. do not disclose an arm that is operably connected between the lever and the deck lift system as defined in the method of claim 9. Properly interpreted, the term "operably connected" must be defined in a manner that reflects the intended purpose of the claimed invention. *See, e.g., Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1118 (Fed. Cir. 2004) ("[The term 'operatively connected'] is a general descriptive term frequently used in patent drafting to reflect a functional relationship between claimed components."). The operable connection of the arm to the lever and the deck lift system defined in claim 9 associates the arm with the lifting and lowering movement of the mowing deck. According to claim 9, the mowing deck is lifted when the lever is moved from the first position to the second position and the arm is displaced to locate the shoulder away from the

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outer edge of the cam. The arm is thus not a passive component of the lifting operation. This intended purpose of the claimed operable connection between the lever, arm and deck lift system accords with Applicant's specification discussed infra at page 3.

In Swartzendruber et al., however, plate 90, which the Examiner has erroneously interpreted to satisfy the arm requirement of claim 9, plays no role in the lifting operation of the deck. Rather, Swartzendruber et al. disclose that the deck lifting process is the result of a rotation of lever 62, which causes a rotation of plate 72 (due to the connection of rod 69 between lever 62 and plate 72) and plate 74 (via the connection of rockshaft 70 between plates 72 and 74). Plates 72 and 74 are connected by lift links 76 to arms 42 which connect to brackets 40 on the mowing deck 18. Plate 90 merely rotates with rockshaft 70 away from and toward the height of cut adjuster 118. Plate 90 serves no purpose in lifting the mowing deck and cannot properly be considered to be operably connected between a lever and a deck lift system.

In addition, Swartzendruber et al. does not disclose a shoulder that is located on the arm so as to be between the lever and the deck lift system. The Examiner has erroneously interpreted the edge of plate 90 to satisfy the shoulder requirement of claim 9. A shoulder as defined in Applicant's specification is a structure that is secured to and extends laterally of an intermediate portion 76 of arm 52. (Fig. 6, page 12, lines 13-16). The edge of planar plate 90 is not such a structure. Further, in that plate 90 does not extend between the lever and the deck lift system, it is erroneous to interpret the edge of plate 90 as a disclosure of a shoulder on an arm between the lever and the deck lift system, as required by claim 9. For all of the aforementioned reasons, Applicant respectfully submits that the rejection of claim 9 under 35 U.S.C. 102(e) as anticipated by Swartzendruber et al. should be overturned.

Conclusion

Swartzendrube et al. does not disclose a deck height adjustment mechanism having a moveable arm and shoulder as defined in claims 1, 9 and 14. Accordingly, it is

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respectfully requested that the Board reverse the final rejection of claims 1-4, 9, 14 and 17 and direct that the instant application proceed to allowance.

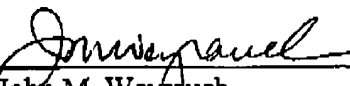
Any inquiry regarding this Appeal Brief should be directed to John M. Weyrauch at Telephone No. (612) 767-2511, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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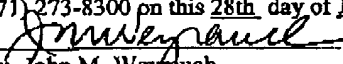
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By


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Appendix A

[Claims 1-14 and 17]

1. An apparatus for adjusting the height of a mowing deck of a riding mower relative to a ground surface, the riding mower having a frame supporting an operator seating area and a deck lift system, wherein the mowing deck is supported by the deck lift system, the apparatus comprising:
 - a lever pivotally connected to the frame of the mower proximate the operator seating area;
 - a moveable arm having a first end pivotally connected to the lever and a second end, opposite the first end, operably connected to the deck lift system, the arm comprising a shoulder between the first end and the second end generally adjacent the operator seating area, wherein the shoulder connects to and extends generally normal to the arm; and
 - a cam wheel rotationally connected to the frame of the mower proximate the shoulder of the arm, the cam wheel having an axis of rotation and an outer edge of varying radius relative to the axis of rotation, wherein the shoulder contacts a portion of the outer edge when the lever is in a first position, the shoulder is spaced from the outer edge when the lever is in a second position, and wherein the mowing deck height above the ground surface is a function of the radius of the cam outer edge in contact with the shoulder.
2. The apparatus of claim 1 wherein the lever is a foot actuatable lever.

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3. The apparatus of claim 1 and further comprising a handle connected to the cam wheel, the handle enabling a user to rotate the cam wheel.
4. The apparatus of claim 3 wherein the cam wheel is fixed on a shaft rotatable by the handle, the shaft rotationally connected to the frame of the mower.
5. The apparatus of claim 4 and further comprising a height selector wheel fixed to the rotatable shaft adjacent to the cam wheel, the height selector wheel comprising a plurality of circumferential notches, wherein each notch corresponds to a different radius of the cam wheel.
6. The apparatus of claim 5 and further comprising a latch pivotally connected to the frame of the mower, the latch comprising a finger, the finger of the latch engaging a notch of the height selector wheel when the latch is in a first position, and the finger of the latch disengaging the notch when the latch is in a second position, the cam wheel being rotatable by the handle when the latch is in the second position.
7. The apparatus of claim 6 wherein the height selector wheel comprises a first planar surface oriented towards the operator seating area, the first planar surface having indicia at each notch indicative of a height of the mowing deck relative to the ground surface when the finger of the latch engages the notch.
8. The apparatus of claim 1 and further comprising a transport lock, the transport lock rotatably connected to the frame of the mower proximate the operator seating area, the transport lock having a handle and a finger, the finger engaging the shoulder of the moveable arm when the lever is in the second position and the transport lock is in a first position to secure the mowing deck in a fully

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raised position, and the finger disengaging the shoulder when the transport lock is in a second position to permit the lever to move to the first position.

9. A method of adjusting the deck height on a riding mower from a first deck height to a second deck height, the riding mower comprising a frame, a deck lift mechanism connected to the frame, a mowing deck connected to and supported by the deck lift mechanism, and an operator seating area, the method comprising:

providing a lever pivotally connected to the frame proximate to the operator seating area;

providing a displaceable arm operably connected between the lever and the deck lift system, the displaceable arm comprising a shoulder on the arm between the lever and the deck lift system; and

providing a cam wheel rotationally connected to the frame near the shoulder of the displaceable arm, the cam wheel having an axis of rotation, an outer edge, and a varying radius relative to the axis of rotation, wherein a portion of the outer edge contacts the shoulder when the lever is in a first position;

moving the lever from the first position to a second position, and displacing the arm and locating the shoulder away from the outer edge of the cam, thereby lifting the mowing deck to a raised position;

rotating the cam wheel to a position representative of a desired deck height; and

moving the lever from the second position to the first position, thereby displacing the arm and locating the shoulder in contact with the cam outer edge to lower the mowing deck to the desired height.

10. The method of claim 9, wherein the step of providing the cam wheel further comprises providing a disk rotationally connected with the cam wheel, the disk and cam wheel

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rotating on a common axis, wherein the disk comprises a plurality of circumferential notches, and positioning a latch in a first circumferential notch.

11. The method of claim 10 wherein disk further comprises indicia at each of the plurality of circumferential notches indicative of a height of the mowing deck relative to the ground surface.

12. The method of claim 10 wherein the step of rotating the cam wheel additionally comprises:

disengaging the latch from the first circumferential notch of the disk;

rotating the cam wheel and the disk; and

engaging the latch into a second circumferential notch in the disk.

13. The method of claim 10 wherein the step of providing the lever comprises providing a foot-actuated lever near the operator seating area.

14. A deck lift system for adjusting the height of a mowing deck of a riding mower relative to a ground surface, the mower having an operator seating area and a frame, the deck lift system comprising:

a rear rotating assembly rotatably connected to the frame and connected to a rear portion of the mowing deck;

a front rotating assembly rotatably mounted to the frame and connected to a front portion of the mowing deck;

linking members connecting the front and rear rotating assemblies;

a means for operating the deck lift system to raise and lower the mowing deck, wherein the means for operating comprises:

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a lever pivotally connected to the frame proximate to the operator seating area; and

a displaceable arm having a first end pivotally connected to the lever and a second end connected to the rear rotating assembly of the deck lift system; and

means operable within the operating means for adjusting the height of the mowing deck, wherein the means for adjusting the deck height comprises:

a shoulder connected to the arm between the first end and the second end, the shoulder extending normal to a direction of displacement of the displaceable arm; and

a cam wheel rotationally connected to the frame of the mower proximate the shoulder of the arm, the cam wheel having an axis of rotation, an outer edge, and a varying radius relative to the axis of rotation, wherein a portion of the cam outer edge contacts the shoulder when the mowing deck is in the deck down position, and wherein the height of the mowing deck above the ground surface in the deck down position is a function of the radius of the cam outer edge in contact with the shoulder.

17. The deck lift system of claim 14 wherein the means for adjusting the deck height at the deck down position additionally comprises means for locking the cam wheel at a position representative of a selected deck height.